

New Genera and Species of Odonata from Australia in the Dobson Collection

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(Text-figures 1-4.)

Mr. Roderick Dobson, who has recently retired from Australia, has loaned me the part of his collection of Odonata containing the still undetermined species and others of which he is in some doubt as to his own determinations. Along with these he has also sent an interesting nymph collected in North Queensland by that keen coleopterist Mr. E. Adams, which I have since determined as belonging to *Antipodogomphus proselytus* (Selys in Martin).

The collection has furnished some interesting surprises, the most valuable acquisitions to the Australian fauna being two new genera of the *Corduliidae*. An extraordinary richness in the family *Corduliidae* is one of the most striking characteristics of the Australian Odonata, and all evidence seems to point to the origin of this important family in that continent or in a former Antarctic continent which connected South America with Australasia, the positive close relationship of the *Corduliidae* of the two areas strongly supporting this thesis. From a Corduline stock and the Australian *Synthemidae* arose the recent great family *Libellulidae*, which has populated the whole of the Earth's surface.

The descriptions of the new genera and species, together with some notes on the *Argiolestes* follows:—

MICROMIDIA gen. nov. (Fig. 1).

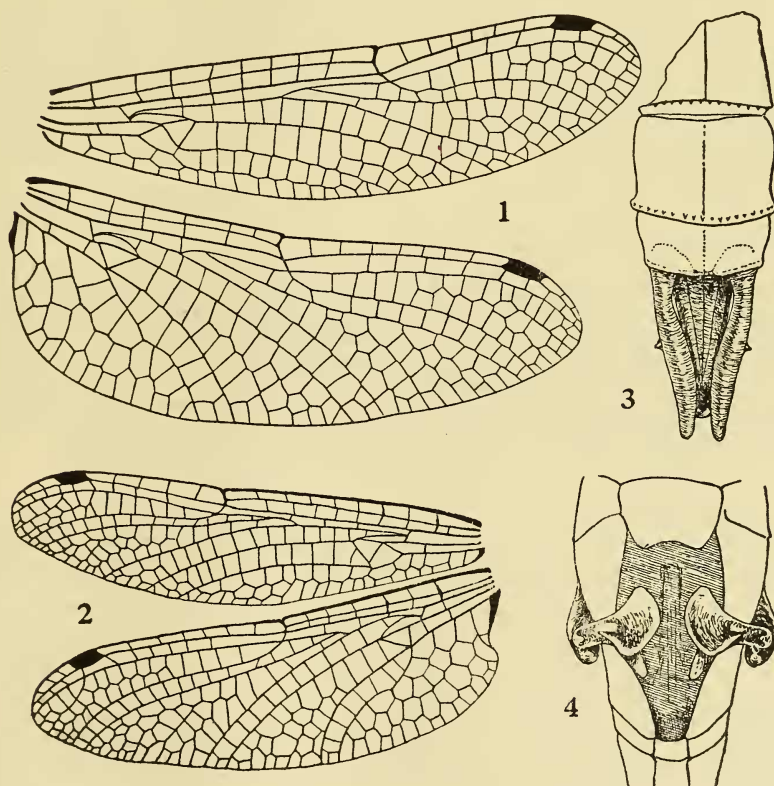
Small, slender dragonflies belonging to the family *Corduliidae* with the following venational characters: Discoidal triangle of forewing with or without a bend in the costal margin, which, if present, is situated far distally; discoidal field of the same wings with parallel borders throughout and containing a single row of cells almost to the border of wing; discoidal triangle of hind wing with its base slightly distal to the line of arculus; anal-loop very variable, of 5 to 8 cells in all, arranged in two rows or rarely one row and one double cell (fig. 3, e); anal field of forewings two cells deep, that of hind four cells deep; 1-4 cross-veins to the Bridge nearly constantly in all wings; anal vein in forewings subpectinate; base of hindwing shallowly notched but the tornal angle prominent; membrane present; pterostigma small, covering only one or two cells, usually braced; an incomplete basal subcostal antenodal almost constantly present in the forewings; anal triangle broad and long; one cubital cross-vein in forewings and two in the hind, the distal one in line with the arculus and forming a somewhat quadrate subtriangle (this vein absent in one hindwing of one female); sectors of arculus arising from the same point in the forewings and then immediately divaricate; those of the hindwing fused for a short distance; primary antenodals strongly differentiated from the secondaries and separated by a single secondary; the distal antenodal of hindwings commonly incomplete (50 per cent); the secondaries of forewing frequently not coinciding. (In addition, in one of the males, the right forewing has a cross-vein in the basilar space, but obviously as an aberration.) Head relatively large; legs rather short, slim, the tibiae with long, fine spines, and the male with the usual tibial keels common to the *Corduliidae*; Abdomen slim, but slightly broadened at base and slightly fusiformly so at end segments; cylindrical and a little compressed in the female; male genitalia very prominent, the hamules projected and so deeply emarginate as to appear forked. Anal appendages rather long and slim in the male, short in the female.

Type species of the genus *Micromidia rodericki*.

MICROMIDIA RODERICKI sp. nov. (Fig. 1, 2-4; 3, e).

Male. Abdomen 25 mm. Hindwing 23 mm. Pterostigma 1.75 mm.

Head: Eyes large, dark reddish brown (but green during life), labium reddish brown, labrum dull ochreous, rest of head a dark steely black. Thorax dark green or prussian-blue metallic without any pale markings save the antealar sinus and the middorsal carina, which are bright ochreous. Legs with femora blackish brown, the tibiae similar but with a yellow line on the flexor surfaces. Femora with very closely-set, minute spines but two or three longer distal ones. Wings hyaline, pterostigma black; nodal index—8-9 antenodals (rarely 10) and 4-6 postnodals in forewings; 5½-6 antenodals and 6-8 postnodals in the hind.



1. 1, Wings of *Austrophya mystica* Tillyard, from the type in the British Museum (Natural History), for comparison with; 2, Wings of *Micromidia rodericki* sp. nov., 3, Anal appendages of the male, same species; 4, Male genitalia of same species.

Abdomen glossy black marked with bright chrome yellow on the sides of segments 1 and 2 and on the dorsum of segments 1 to 7, a small apical triangular spot on segment 1, a linear stripe on the middorsum of 2, extending the whole length of the segment, broader middorsal stripes on segments 3 to 7 which taper apically and terminate just short of their apical ends. Genitalia on segment 2 bright yellow, the hamules very large and projecting conspicuously, deeply emarginate, the inner end of notch produced into a short sharp spine, the outer produced into a curved, rather obtuse, hook. Anal appendages black, narrowly cylindrical, separated at base, converging towards apices which are rounded and rather obtuse; the outer border of appendages rather sinuous and with a small spine situated about their middle; seen in profile they first curve downwards, thickening towards the apices, which curve gently upwards. The inferior appendage of almost the same length as superiors, triangular. (Fig. 1, 3).

Female. Abdomen 23.5 mm. Hindwing 24 mm.

Very similar to the male in colouring, but the thorax is more cupreous than green metallic; occiput black. Yellow markings on abdomen more extensive, the bands broader and not interrupted at the segmental joints from 1 to 7. Anal appendages shortly conical, black, barely longer than segment 10. Ovipositor short, inconspicuous, minutely emarginate at its middle. Wings hyaline, anal-loop less developed, consisting of 5 to 6 cells (as against 8 to 9 in the males); nodal index—9 antenodals and 4-5 postnodals in the forewings; 5½-6 antenodals and 5-7 postnodals in the hind.

Habitat: N.E. AUSTRALIA: Thursday Island, Torres Strait, Queensland, 2 males and 2 females collected by R. Dobson, 15.i.57. A shade-loving insect with weak flight, inhabiting rain-forest.

The genus and species appears to lie closest to *Syncordulia*, especially by the formation and arrangement of the primary antenodals. It probably belongs to the group *Austrophya*, *Neophya*, and *Cordulephya*, matching the latter in its small size. The great irregularity of the venation, which is unstable in so many respects, suggests that it is a species in-the-making, in which the venation of the wings is still far from crystallisation. The persistence of the primary antenodals stamps it as quite archaic in nature. The incomplete antenodal in the hindwing is an extremely rare character in the Anisoptera and is evidently specific in nature. Type, allotype and cotypes in the Dobson collection.

ARCHAEOPHYA gen. nov. (Fig 2).

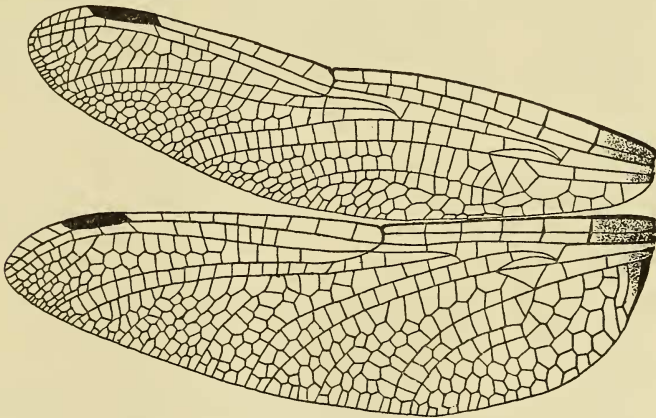
Rather large dragonflies belonging to the family *Corduliidae*, with the following venational characters: Discoidal triangle of forewing with distal and proximal sides equal and slightly longer than the costal, which is straight; discoidal field of forewing with sides at first parallel and then widely divaricate, beginning with 2 rows of cells at triangle and then running for a distance of about 5 cells as a single row of cells, changing then to 2 rows to as far as level of nodus, after which it broadens rapidly to 10 or more cells at border of wing; discoidal triangle of hindwing with its base well distal to level of arculus; anal-loop small and compact, made up of only 7 cells in two rows, the midrib highly zigzagged; anal field of forewing 2 cells deep, that of the hindwing 5 cells deep; only 1 or 2 cross-veins as additionals to the Bridge; anal vein in forewings pectinate; no incomplete basal antenodals present; one cubital cross-vein in forewings, 2 in the hind, the distal one proximal to arculus, and so the subtrigone not formed; sectors of arculus arising from a common point but divaricate from origins; primary antenodals strongly differentiated, with no secondaries intervening and much more widely separated than the secondaries, which are non-coinciding save by accident; pterostigma elongate, covering one to two cells, braced but the brace divorced slightly from the end of the organ. Venation generally close. Head large; thorax bulky, abdomen compressed. Legs of moderate length and robustness, ovipositor inconspicuous (distorted and rather concealed in the specimen, which is decidedly teneral).

The type species of the genus is *Archaeophya adamsi*, and the holotype is in the Dobson collection.

ARCHAEOPHYA ADAMSI sp. nov.

Female. (Male unknown). Abdomen 42 mm. Hindwing 41 mm.

Head: labium blackish brown; labrum dark reddish brown, anteclypeus yellow, postclypeus and frons dark ochreous but the latter with a suggestion of metallic colouring beginning to develop; vesicle black, occiput dark brown; behind head bright ferruginous. Prothorax brownish; synthorax dull reddish brown with a poor violaceous or bluish lustre (which probably becomes definitely metallic in the full adult?). The middorsal carina finely mapped out in pale yellow; laterally two bright creamy-yellow oblique stripes, one centred over the mesopimeron, the other covering the lower half of the metepimeron. Legs black, of moderate length and slimmness, the femora with closely-set minute spines, the tibiae with moderately robust longer spines. Wings hyaline with dark brown vittae in the subcostal, costal, and cubital spaces extending to the first antenodal anteriorly but short of the *Cu*₁ in the cubital space. Pterostigma long and narrow, 4 mm. in length, braced, blackish brown. Nodal index—8-9 antenodals and 7 postnodals in forewings, 5 antenodals and 8 postnodals in the hind. Abdomen steely black marked with citron yellow—a pair of obliquely oval transverse spots on dorsum of segment 2, followed laterally by a small rounded spot; a pair of rounded or squared spots against the jugal sutures of segments 3 and 4, and a small spot on each side on the ventral border near the base of these segments; 5 to 8 with similar spots growing progressively



2. Wings of *Archaeophya adamsi* sp. nov., female.

smaller from segment to segment and more rounded. Apal appendages widely separated, slim, tapering to a point, and rather longer than segment 10, black.

Habitat: N. QUEENSLAND: Edungalba, 28.xii.53, a single rather teneral female, collected by E. Adams, after whom this fine new species is named. It bears a superficial resemblance to the larger forms of *Synthemis* of New Caledonia, and by coincidence has the same body-colouring and markings as those of *Synthemis miranda* Selys from that island. The persistence of the primary antenodals is an archaic character, as in the *Syntheminae*, but the sectors of the arculus are separated and there are no cross-veins in the basilar space; the discoidal triangle of the hindwing is more recessed than in those insects, nor do the antenodals of the hindwings alternate as thick and thin. One can only place the genus at the root of the Corduliidae in a somewhat isolated position.

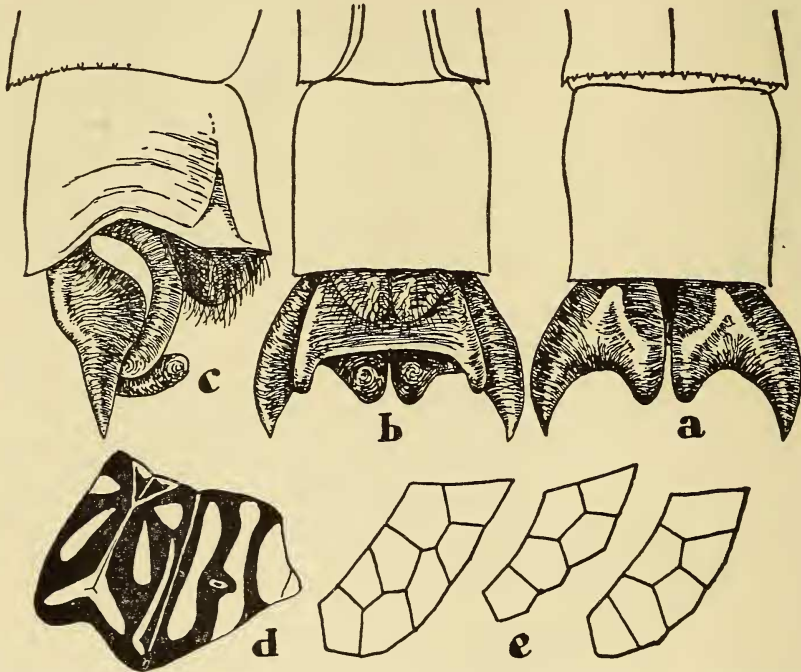
EUSYNTHEMIS AUROLINEATA Tillyard.

Tillyard disposed of this species in ten short lines, describing it as a subspecies of *gutitata*; it seems to me that its differences are so wide as to give it specific rank. There is an adult male in the Dobson collection from Barrington

Tops, N.S.W., 8.i.54, collected by D. Sands, which offers the opportunity of describing this beautiful species in full.

Male. Abdomen 35 mm. Hindwing 30-34 mm. Pterostigma 2.75 mm.

Head: labium citron yellow, labrum black, anteclypeus yellowish, postclypeus black with the outer ends pale bluish; frons pale blue, its lower border anteriorly lined with black, the base in front of eyes narrowly black but prolonged forward into the frontal sulcus; vertex dull blue black, occiput glossy black. Behind



3. Male anal appendages of *Austrogomphus turneri* Martin, *a*, Dorsal view; *b*, Ventral aspect; and, *c*, Right lateral view; *d*, Markings of thorax of same species (diagrammatic); *e*, Anal-loop of male *Micromidia rodericki* sp. nov., showing extreme variation met with.

head glossy black but with a broad citron yellow band on the margin of the eyes. Prothorax yellowish brown. Synthorax a brilliant metallic prussian-blue, the middorsal carina delineated in yellow, alar sinus dull brown, antehumeral stripes yellow, parallel with the median carina and situated half-way between the latter and the humeral suture. Laterally two pale citron yellow stripes, the anterior on the mesopimeron with irregularly sinuous borders fore and aft, the posterior covering the lower part of the metepimeron and with its lower end curved strongly forward. Legs black, the anterior femora citron yellow on the flexor surface near the proximal ends. Abdomen black marked with bright yellow spots—a pair of these on all segments from 3 to 8, greatly enlarged and pyriform in shape on the last; a pair of transversely oval spots situated obliquely on the dorsum of segment 2, an apical spot on 1 and a pair of triangular basal spots on 3, which together with the pair of jugal spots enclose a large diamond-shaped spot of black. Anal appendages black, the superiors simple, obtuse at apices, forcipate and with a robust baso-lateral spine. Inferior appendage of the same length, triangular but slightly truncated at apex. Wings hyaline, nodal index—14 antenodals and 9 to 10 postnodals to forewings, 11 to 12

antenodals and the same number of postnodals to the hindwings. Anal-loop of 9 to 10 cells arranged in two horizontal rows, 2 medial and 5 cubital cross-veins; membrane and pterostigma black.

EUSYNTHEMIS NIGRA NIGRA Tillyard.

Two females of this subspecies are very large (Abdomen 42 mm., Hindwing 39 mm.), and one (Kuranda) has the wings tinted with amber and deeply enfumed throughout, the cell middles paler. The other (Dunk Island) has dark amber rays in all wings extending almost to the arculus. In both, the thoracic stripes are uninterrupted; the yellow areas on the frons are well separated, the labrum and anteclypeus are blackish brown, the postclypeus yellow at its centre only; the middorsal carina of thorax is finely delineated in yellow. Venational details of the Dunk Island specimen are as follows: Nodal index—15 antenodals, 8 to 10 postnodals to forewings, 3 cross-veins in median space, 6 cubital cross-veins in forewings and 4 in the hind. Kuranda specimen had nodal index—14 antenodals and 9 postnodals to forewings, 11 antenodals and 11 to 13 postnodals in the hind; other details similar to the Dunk Island specimen. Kuranda, 13.xii.54. Dunk Island 13.x.55.

Nymph of *ANTIPODOGOMPHUS PROSELYTUS* Selys.

Material: a single exuviae from Edungalpa, N. Queensland, xi.56, collected by Mr. E. Adams. It was unassociated with the imago which had probably emerged some time before, so that the determination is by supposition. However, the nymph bore a striking resemblance to those of *Macrogomphus*, *Phyllogomphus*, *Merogomphus*, etc., and it is found in all of these that the lengthening of the terminal segments in the nymph is reflected in the imago, which also have the end segments of the abdomen abnormally lengthened. Now the only Australian gomphine genus which is known to possess this peculiar character is *Antipodogomphus*, so that there can be little or no doubt about the correct identification of Mr. Adams' nymph. The species *proselytus* appears to be more restricted to N. Queensland, whilst *acolytus* is found further to the south and N.S. Wales; of the two species, *proselytus* is the more likely determination of our nymph, although it is probable that the nymph of the former will show little or no differences from that of *proselytus*.

Description of Nymph (Fig. 4, a).

Total length, 23 mm. The nymphal case or exuviae is a pale yellow, but possibly a pale green or greenish grey in the living state. The labium (mask) is subrectangular, longer than broad and broader anteriorly than towards the mentum. The anterior border crenate, the middle crenation representing the midlobe, which is shallowly cupped and fringed with stiff setae or teeth. Lateral lobes comparatively massive, ending in a very stout fang which bears minute teeth along its medial border; the two overlap across the mid-line, and each is furnished with a long robust mobile hook, which also overlap; apart from the teeth, there are no spines or hairs visible throughout. Head triangular, the eyes occupying the greater part as each is rather more than an hemisphere; between them the ocelli are plainly visible. The antennae are 4-jointed, the scape short and cylindrical, the pedicel similar but shorter and smaller, the first segment of the distalia is massive, flattened, somewhat curved inwardly and ridged longitudinally; the distal segment is pointed and very minute; the whole structure is coarsely hairy on the medial side. Thorax bulky and the broadest part of the nymph; wing-pads compressed and of the pea-pod shape, extending posteriorly to the end of the 3rd abdominal segment. Legs robust, the femora and tibiae exceptionally so, strongly curved inwardly, the tibiae ending outwardly in a strong short spine adapted for digging or burrowing in sand; the hind tibiae are without this spine and these legs are apparently used only for locomotion; the whole length of the legs fringed with long coarse hairs. Abdomen strongly tapered from base to apex, cylindrical or torpedo-shaped, segments 8 to 10 progressively elongated, 9 and 10 very narrow and greatly elongated. Segments 5 to 8 with a middorsal apical spine, segments 7 and 8 with small lateral spine. Type in the Dobson collection.

AUSTROGOMPHUS TURNERI Martin. (Fig. 3, *a-d*.)

Male. Abdomen 33 mm. Hindwing 26 mm. Pterostigma 3 mm.

Head: face including the lips and frons bright ochreous, the latter with a narrow black border anteriorly against the postclypeus and a narrower one at its base before the eyes; vertex and occiput black but with a small oval spot of yellow just prior to the ocelli. Prothorax black with two small dorsal points of yellow on the middle lobe and the hinder border of the posterior lobe broadly citron yellow. Thorax black on dorsum marked with citron yellow as follows—two small spots in the alar sinus, isolated triangular upper humeral spots followed after a break by very narrow humeral stripes; the middorsal carina narrowly, which is connected below to a complete mesothoracic collar; oblique elongate oval antehumeral spots tapered above to a point but somewhat truncated below. Laterally a broad posthumeral yellow stripe followed by a complete sinuous black stripe centred over the spiracle, which is again followed by a second, narrower, sinuous yellow stripe. Finally a black stripe over the second lateral suture bordering the metepimeron, the greater part of which is yellow. Wings hyaline, pterostigma black, braced, slightly swollen; costa bright citron yellow as far as apex. Nodal index—11 to 12 antenodals and 7 postnodals to forewings, 8 to 9 antenodals and 7 to 8 postnodals to hindwings. Anal field of hindwing 4 cells deep, anal-loop absent; anal triangle variable, 3-celled on the right hindwing, 4-celled on the left (atypical). Abdomen with segments 1 to 6 black marked with yellow; 7 to 8 ochreous with thick black apical annules covering a little less than half of the segment. Segment 2 with a middorsal linear marking expanded into an oval at the middle of segment, the lower parts of the sides and the oreillets also yellow; segments 3 to 6 with basal yellow rings prolonged middorsally to join up with an elongated oval middorsal spot just posterior to the jugal sutures; segments 9 and 10 and the anal appendages bright ochreous without any dark markings. Anal appendages of the conventional Austrogomphine shape; superiors nearly as long as segment 10, seen from above, they are bifurcated, the outer branch a robust horn tapering to a point curved slightly posteriorly, the inner branch unguate and with rounded apex; a ridge or keel runs from the base and splays out posteriorly to lose itself on both branches. Laterally the outer branch has an angulated upper border corresponding to the dorsal keel and the prolonged apex of the horn, whilst below it is swollen into a ball-like subbasal protuberance; the inner branch is seen to be turned downwards sharply to end in a robust reflexed tooth or spine. The inferior appendage is broad at base, with its outer angles prolonged into strongly upcurved branches which interlock with the branches of the superior appendages. (Fig. 3, *a-c*.)

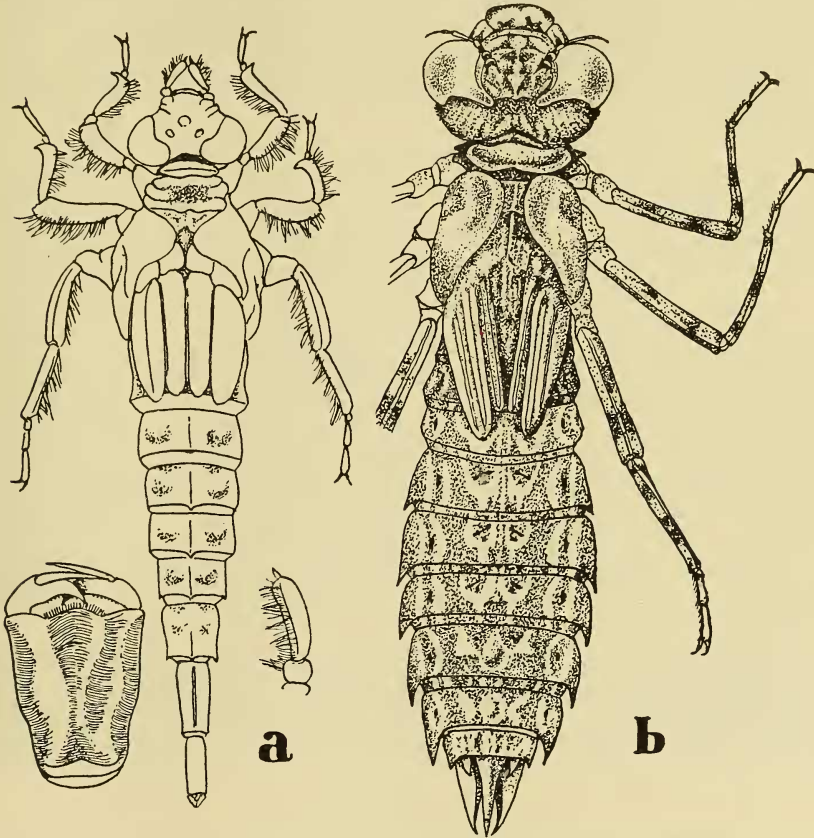
Habitat: QUEENSLAND. Rockhampton, xi.55, collected by C. Vallis. This species is known only from the holotype male in the Senckenberg Museum and a doubtful half-destroyed female in the Tillyard collection. The above redescription is given for the benefit of Australian readers, since the original description by Martin is not readily available. Also, the present specimen has some important differences, the most important being the entire mesothoracic collar, which is interrupted in the type. In my monograph on the Australian Gomphidae I stated that, owing to not having seen the type, I was not able to state with certainty whether the species was a true *Austrogomphus*, but I am now able to confirm this and also to give figures of the anal appendages, which I then knew only from Martin's crude figures. The species differs from all other Austrogomphines by the terminal abdominal segments being ochreous and without any dark markings.

AUSTROGOMPHUS AMPHICLITUS Selys.

AUSTROGOMPHUS PRASINUS Tillyard

Three specimens of *Austrogomphus amphiclitus* Selys were present in the Dobson collection sent for identification, and in the course of examination it was observed that there was more than one cross-vein between the sectors of the arculus in the hindwings, which showed the species to be an epigomphine. All three specimens were from the Tamborine Mt. area, and it was at first considered

that this venation might be a local aberration; however, on referring this point to Mr. Kimmins, of the British Museum, he reported that the type also had the same venational character, so that it became evident that *amphiclitus* must be transferred to genus *Austroepigomphus*. In the course of his examination Mr. Kimmins noticed also that *Austrogomphus prasinus* had the same epigomphine venation. A subsequent examination of a long series of examples of *prasinus*



4. Nymphs of, *a*, *Antipodogomphus proselytus* Selys in Martin (Labial mask and antennae inset); and *b*, *Austroaeshna unicornis pulchra* Tillyard.

collected by Mr. Dobson showed that all, without a single exception, were positive in this respect, so that now a third species, *prasinus*, must be transferred to genus *Austroepigomphus*. The occurrence of more than one cross-vein between the sectors of the arculus in the hindwing (and usually more than 3 in the forewing) actually means that the recession of $Riv+v$ towards the arculus is incomplete in the *Epigomphinae* and that they are a stage behind the *Gomphinae* in evolution; thus, on the grounds of good taxonomy, it is imperative that those two species should be relegated to that subfamily.

The *Argiolestes icteromelas-griseus* complex.

Tillyard, in his paper "On some new and rare Australian Agrionids," 1913, *Proc. Lin. Soc. N.S.W.*, 37: 410-415, split up the two species *Argiolestes icteromelas* Selys and *griseus* Selys into a number of races according to their size and colouring;

he made no comments on their venation, which appears to have been overlooked. Mr. Dobson's long series of both species exhibits a remarkable variation in their venation, especially in the development of the Anal field, which varies from 4 to 1 row of cells deep, a character which is of great taxonomic importance. Size alone is a variable factor, depending largely upon the altitude at which the species breed (at least this is so with the Zygoptera), the largest and most robust species being found at the greater altitudes. Regarding colour and the degree of pruinosity of the body in these insects, much depends on the age of respective specimens, so that, unless species are collected throughout a whole season, these characters are very unreliable. By employing the degree of development of the Anal vein and field, a number of subspecies or races can be established on sound anatomical grounds.

Argiolestes icteromelas icteromelas Selys.

Selys' measurements for the type are: Male, abdomen 23, hindwing 27-28, but as this gives the hindwing longer than the abdomen it is obvious that "33" should be read for "23." The Dobson series vary from 34 to 38, with wings from 27 to 29. In all specimens there are 2 rows of cells behind the Anal vein. Rarely in occasional specimens there are 2 rows of cells following the pterostigma.

Habitats: S. QUEENSLAND: Bouldercombe, 20 miles W. of Rockhampton, 2 males collected by C. Vallis; Montville, Blackall Range, 1 male, 23.ix.55; Tamborine, 15.iii.53, and ii.v.53, 3 males, collected by D. Curtis; N.S. WALES: Tenterfield, 27.xii.55, 1 female; Blackheath, Blue Mts., 27.xi.49, 1 male, 2 females; Upper Kangaroo Valley, 25.xi.49 and 29.xi.53; Wahroonga, 24.x.56 and 27.xi.53, one pair; Wentworth Falls, 2.ii.49, 1 male; Galston Gorge, Hornsby, 28.iii.51, several of both sexes; near Sydney, 16.ii.12, collected by R. J. Tillyard; Narrabeen, Sydney, 25.xi.50, and Mittagong, 30.xi.50, several of both sexes. (Unless otherwise mentioned, all specimens collected by R. Dobson.)

Argiolestes icteromelas nobilis Tillyard.

Tillyard's measurements give: Male, abdomen 39.5, total length 40! hindwing 32 mm. As only .5 mm. would be left for the head and thorax, it is obvious that for "total length 40" should be read "50." Female, abdomen 34.5, hindwing 33 mm.

The types came from Ebor, Dorrigo Plateau, N.S. Wales; there is a pair in the Dobson collection which I associate with this subspecies and which come from the Ben Lomond Range, 4500 ft., N.S.W., 27.xii.54. This race is distinguished by the greatest development of the Anal field, in which there are three rows of cells. One male has only 2 rows in the forewing but 3 in the hind; females have 3 rows in both wings. Usually 2 rows of cells after pterostigma.

ARGIOLESTES CALCARIS Fraser.

It is possible that this species has been mistaken for a small example of *icteromelas*, or more probably for the common *griseus*, which it so closely resembles, the spine on the superior anal appendage having been overlooked.

A. calcaris resembles *icteromelas* in possessing a spur to the superior anal appendages, but is at once distinguished from it by its much smaller size and by there being only a *single row of cells* posterior to the Anal vein. It is, of course, distinguished from *griseus* by the possession of the spur.

Argiolestes calcaris race *tenuis* Fraser.

Has only a single row of cells posterior to the Anal vein. Male. Abdomen 32. Hindwing 24. (Against "Abdomen 26 and hindwing 22" in *calcaris calcaris*.) The high ratio between the lengths of abdomen and hindwing of *tenuis* may indicate a new species rather than a race, but I have not been able to detect any other differences. Two males from Barrington Tops have abdomen 30 and hindwing 27.5, and the abdomen is stouter than in *tenuis*.

Argiolestes griseus griseus Selys.

This species was described by Selys from a single male, exact location not stated, so that it is impossible to distinguish it from any of its races, as formulated by Tillyard. The venation of the Anal field was not given by Selys, which is unfortunate, as I find wide differences existing in this area between specimens from different localities. For purposes of classification I am assuming that the Anal area in *griseus griseus* has constantly 2 rows of cells, and that the venation in the same area of other races either exhibits inconstant venation or only one row of cells, varying at the most by the presence of occasional double cells, that is, single cells traversed by a horizontal vein to form the capital letter "H." In *griseus griseus* I also note the Anal vein is deeply zigzagged, and shows evidence of a vestigial pectination, as later develops in the larger forms of *Argiolestes* and reaches its completion in the *Amphipterygidae*. By comparing a series from *calcaris*, through *griseus* (and its various races), *icteromelas nobilis* and *alpinus* Tillyard, we find a graphic history of the evolution of the Anal vein and field which led up to the higher forms in the *Amphipterygidae* and *Agriidae*.

Measurements of *griseus griseus* are: Male. Abdomen 28, hindwing 22. Female. Abdomen 23 to 25, hindwing 24 to 25. Tillyard's race *eboraceus* belongs here, with 2 rows of cells posterior to the Anal vein.

Argiolestes griseus subgriseus Fraser.

Only a single row of cells posterior to the Anal vein. Male. Abdomen 26, hindwing 20. Female unknown. Wahroonga, N.S.W., x.56.

Argiolestes griseus intermedius Tillyard.

Only a single row of cells posterior to the Anal vein. Male. Abdomen 27, Hindwing 22. Female. Abdomen 23, Hindwing 21. The difference between this race and the typical one are given fully by Tillyard, although I have found them difficult to appreciate. Glen Wills, 3500 ft., 24.x.56, Victoria.

Argiolestes griseus albescens Tillyard.

Only a single row of cells posterior to the Anal vein. Male. Abdomen 27-30, Hindwing 20-22. A very slender form with a high ratio between lengths of abdomen and hindwing. The species is best differentiated by the double belt of pruinescence on segment 2, which encloses a black, goblet-shaped marking on the dorsum. Occasional double cells are found posterior to the Anal vein. Palm Groves, S. Queensland, 2 males, 4 females, 24.ix.55; Tamborine, 4.i.53, collected by B. Salkild.

REFERENCES

- Fraser, F. C., 1953.—*Cat. Coll. Selys*, 21, *Gomphidae*; 31, fig. 8, F.
 Martin, R., 1901.—*Mem. Soc. Zool. France*, 19: 230. Id. 1906, *Cat. Coll. Selys*, *Cordulines*: 8.
 Selys, 1862.—*Bull. Acad. Belg.* (2), xiv: 40. Id. 1886, *Mem. Cour.* xxxviii: 88.
 Tillyard, R. J., 1910.—*Proc. Linn. Soc. N.S.W.*, 35: 311-377.
 —, 1913, *ibid*, 37: 410-415 and 575.